

Origin of Life: Newton, Darwin, and the Abundance of Life in the Universe

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Abstract

Two giants of British science, Newton and Darwin, developed theories of negentropic force in physics and biology. The two scientists are adjacently interred in Westminster Abby, and their theories of gravity and evolution likewise share common ground and a fractal resonance with DNA. Because DNA/RNA is both a replicating molecule and part of the universal 4x3 fractal pattern, the implications for the abundance of life in the Cosmos are enormous.

Introduction

Newton and Darwin are buried a few feet apart in Westminster Abby, but this is not the only distinction they have in common. Both developed major theories of negentropic forces which create information domains. Newton developed the theory of gravitation which produces time and the historical arena for evolution, and indeed creates the entire fractal hierarchy of Nature either directly or indirectly; Darwin developed the theory of Evolution through Natural Selection, producing in time the entire biotic realm (see: "[The Table of Natural Organization](#)"). The two theories intersect in DNA, which, like gravity, has a 4x3 fractal structure, dynamic, and negentropic role, but is also a replicating, biological molecule. Although gravity's connection is indirect, there can be no DNA without gravitation to produce the galaxies, stars, and planets where the molecule and its constituent elements are created and assembled. Even more fundamentally, without gravitation there is no temporal and historic dimension in which evolution can operate (see: "[Introduction to Gravitation](#)"). Gravity is the overarching negentropic energy source producing information as the crown of matter, in which DNA, life, and evolution are embedded like jewels.

Darwin's theory is biotic, and depends upon the 4x3 molecular structure and coding pattern of DNA, of which he was completely ignorant. Nevertheless, Darwin correctly developed the gross features of the theory of evolution and discovered its operant mechanism in Natural Selection. Natural Selection can also be modeled as a 4x3 mechanism: 1) heritability of 2)

differential fitness with respect to 3) the utilization of a limiting resource (Leowntin 1970) within a 4 level population structure: a) the variable individual; b) the reproductive pair; c) the locally adapted population; d) the reproductively isolated species. Newton developed the idea of gravitation by discovering its mechanism or force law ($F = GMm/rr$), which was later shown by Einstein to also have a 4x3 basis (four third-order equations - the changing rate of acceleration in x, y, z, t). Neither Newton nor Einstein elaborated upon the information building potential of gravitation, but this is displayed in "[The Information Ladder](#)".

Although gravitation is an abiotic force, it is nevertheless responsible, directly or indirectly, for every level of the fractal hierarchy, creating the stars and galaxies, creating the elements in stars, and creating the planets which support life. Therefore Newton's Gravitation stands to the Fractal Hierarchy of Nature as Darwin's Natural Selection stands to the Theory of Evolution - gravity is the negentropic engine which produces all the material realms of the fractal hierarchy, while Natural Selection is the negentropic engine of biotic evolution. The fact that both these negentropic drives intersect in the 4x3 fractal, replicating molecule of DNA has enormous implications for the abundance of life in the Universe, amounting to a theory of and a prediction for exobiology.

The 4x3 Fractal Algorithm Creates a Replicating Molecule

In addition to the physical manifestations of free and bound electromagnetic energy (light, dimensions, particles, charges, forces, etc.), the closed cosmic system is governed by four fundamental physical laws: the 1st and 2nd laws of thermodynamics (energy conservation and entropy), "Noether's Theorem" (symmetry conservation), and Causality-Information (the law of cause and effect, or "karma"). During the "Big Bang" or "Creation Event", these 4 natural regulatory laws interact with each other and the 4 dimensions of the spacetime metric to produce matter and the 4 charges and forces of physics, as illustrated in the "[Tetrahedron Model](#)". This still-mysterious symmetry-breaking process (mediated by the weak force) represents the [primordial example and dynamic](#) of the 4x3 fractal algorithm in Nature, producing in turn the first material iteration of the fractal: the 3 families of 4 elementary particles, followed by the ground-state baryons of 3 quarks carrying 4 charges, etc. (see: "[Nature's Fractal Pathway](#)").

After producing the baryon at the particle level (via [weak force symmetry-breaking](#) during the Big Bang), the 4x3 fractal mechanism (operating both in the Big Bang and in the stellar nucleosynthetic pathway) produces alpha particles (helium nuclei) and carbon at the atomic level (carbon carries an astounding 5-fold resonance of the 4x3 algorithm). Shifting to the lower energies of the planetary arena and the atomic electron shell, the fractal drive next produces tetrahedral bonds and crystals at the molecular level (notably in both carbon and water), and finally the 4x3 molecular structure of RNA-DNA. DNA is the molecular intersection of the abiotic fractal resonance and the biological replicating series, due to the simple fact that DNA, while on the molecular structural level a fractal 4x3 resonance, is on the biological level a replicating molecule producing a 4x3 genetic code. Once DNA begins reproducing, molecular competition within a finite environment between similar consumers with similar needs for limited resources creates a new negentropic drive in the domain of Information - Natural Selection - which, like gravity, can also be modeled as a 4x3 dynamic (see above). Acting in

concert with matter's eternal search for antimatter (via the electromagnetic force), gravity and natural selection are complementary abiotic and biotic negentropic drives which have carried biological information systems to fantastic levels of complexity. Augmented further by the abstracting, symbolizing intelligence and technology of humans, there is no known limit to the sophistication information systems may eventually achieve.

Finally, the fact that RNA-DNA is a 4x3 fractal resonance has enormous implications for the abundance of life in the Universe, for it means that the creation of the replicating molecule DNA is not a random event, but a likely and predictable product of the abiotic fractal algorithm operating in any suitable environment. Because water also has a tetrahedral bonding pattern, the linkage between carbon and DNA via the 4x3 fractal series is especially enhanced in the presence of the "universal solvent". This evidently is why life arose on water-covered Earth so quickly after the cessation of the initial period of our planet's accretion and bombardment.

See also: "A Simpler Origin for Life" by Robert Shapiro. *Scientific American*, June, 2007, pages 46-53 (and on www.sciam.com).

See also: "The Origin of Life" by James Trefil et. al. *American Scientist* May-June 2009 Vol. 97 No. 3 pages 206-213.

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